



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,681	07/28/2003	Gilbert N. Riley JR.	112903.128US2	4491
23483	7590	12/03/2009		
WILMERHALE/BOSTON			EXAMINER	
60 STATE STREET			APICELLA, KARIE O	
BOSTON, MA 02109				
ART UNIT		PAPER NUMBER		
1795				
NOTIFICATION DATE		DELIVERY MODE		
12/03/2009		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

michael.mathewson@wilmerhale.com

teresa.carvalho@wilmerhale.com

sharon.mathews@wilmerhale.com

# Office Action Summary

**Application No.**

10/628,681

**Applicant(s)**

RILEY ET AL.

**Examiner**

Karie O'Neill Apicella

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 August 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-11, 14, 15 and 17-93 is/are pending in the application.
- 4a) Of the above claim(s) 22-90 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11, 14, 15 and 17-21 is/are allowed.
- 6) ☒ Claim(s) 5-10 and 91-93 is/are rejected.
- 7) ☒ Claim(s) 2-4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 August 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsman's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. The Applicant's amendment filed on August 12, 2009, was received. Claims 2, 5-6 and 10 have been amended. Claims 1, 12, 13 and 16 have been cancelled. Claims 22-90 have been withdrawn from consideration as being drawn to non-elected claims. Claims 91-93 have been added as new. Therefore, Claims 2-11, 14-15, 17-21 and 91-93 are pending in this office action.
2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on May 12, 2009.

***Drawings***

3. The drawings were received on August 12, 2009. These drawings are acceptable.

***Claim Rejections - 35 USC § 103***

4. The rejection of Claims 1, 5-6, and 10 under 35 U.S.C. 103(a) as being unpatentable over Chiang et al. (US 2003/0082446 A1), have been overcome based on the amendments to the claims and the arguments presented on pages 15-18 of the Remarks dated August 12, 2009.
5. The rejection of Claims 7-9 under 35 U.S.C. 103(a) as being unpatentable over Chiang et al (US 2003/0082446 A1), as applied to Claims 1, 5-6, and 10, and in further

view of Lanni (US 5,949,213), have been overcome based on the finding of a new art rejection.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5-10 and 91-93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanafusa et al. (US 6,844,105 B1) in view of Chiang et al. (US 2003/0082446 A1).

With regard to Claim 91, Hanafusa et al. discloses in Figure 14, a bipolar article (2a), the article (2a) comprising: (a) a housing (71) comprising an inside surface; wherein the inside surface has an arbitrary form factor which is not cylindrical or prismatic, as it has a recessed portion or groove (72) which allows for the shape to not be cylindrical or prismatic; (b) a bipolar structure, called a battery core (21), comprising a cathode current collector, an anode current collector, an anode, a cathode, and an electrolyte in contact with and separating the anode and cathode, and wherein the cathode current collector is in electronic communication with the cathode; and the anode current collector is in electronic communication with the anode (column 6, lines 21-35). Hanafusa et al. discloses in Figures 14-26, wherein the bipolar structure (21) as a whole has an arbitrary form that is not cylindrical or prismatic; and at least one of the cathode, the anode, and their respective current collectors, called a seal portion (22d)

which is obtained by overlapping both ends of the laminated film made up of the anode and cathode and their respective current collectors (column 12, lines 35-45), is conformal to the inside surface of the housing (72). Hanafusa et al. does not disclose wherein the anode and cathode are interpenetrating.

Chiang et al. discloses in Figures 3A-3D, a bipolar device comprising: (a) a bipolar structure (10) having an anode (12), a cathode (14) and an electrolyte (16) in contact with and separating the anode and cathode (paragraph 0052), wherein the anode (12) and cathode (14) are interpenetrating (paragraph 0052). At the time of the invention it would have been obvious to one of ordinary skill in the art to use an interpenetrating anode and cathode with the bipolar device of Hanafusa et al., because Chiang et al. teaches that the bipolar article provides flexibility and can lead to a more efficient design, prototyping and manufacturing sequence, as well as, a tailorable or customizable article having structures of reticulated interface that can be tailored for purposes of controlling and optimizing charge and discharge kinetics (paragraph 0053).

With regard to Claim 92, Hanafusa et al. discloses in the Figures, wherein the housing (71) is an outer casing of the bipolar article (2a) (column 12, lines 13-28).

With regard to Claim 93, Hanafusa et al. discloses in Figure 12, wherein the housing (71) is a housing of a battery powered device, the device being a portable telephone (100) (column 11, lines 33-36).

With regard to Claim 5, Hanafusa et al. discloses a bipolar article (2a) comprising an anode, cathode and electrolyte formed by winding a prescribed laminate in turns, one on top of the other (column 6, lines 10-35). Hanafusa et al. does not disclose

wherein the anode, cathode and electrolyte are sequentially deposited. However, the phrase "sequentially deposited" is functional language and imparts intended use to the structural features of the product. Therefore, while the claim language has been considered with regard to structure, the intended use language it is not given patentable weight because it is directed to a process and not directed to the structural features of the product. Hanafusa et al. teaches a bipolar article comprising an anode, a cathode and an electrolyte, which, as the end result, is the same structure claimed. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. See MPEP 2111. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. See MPEP 2113.

With regard to Claims 6 and 9, Hanafusa et al. discloses a device comprising the bipolar article, the device being a portable telephone, a notebook PC or a portable radio terminal (column 1, lines 6-10).

With regard to Claim 7 and 8, Hanafusa et al. discloses wherein the arbitrary form factor of the bipolar article (2a-2m), as seen in Figures 14-26, especially Figures 23, 24 and 26, is conformal with at least one surface of the device, wherein the device has a cavity, and wherein the arbitrary form factor of the bipolar article (2a-2m) is space-filling within the cavity (as seen in Figures 13 and 27b).

With regard to Claim 10, Hanafusa et al. discloses wherein the bipolar article (2a) is a battery, more specifically called a plate shaped battery (see abstract and see all embodiments).

***Allowable Subject Matter***

8. Claims 2-4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
9. The following is a statement of reasons for the indication of allowable subject matter: the closest prior art, Hanafusa et al. (US 6,844,105 B1) and Chiang et al. (US 2003/0082446 A1), do not teach or fairly suggest wherein the cathode current collector is attractive to the cathode network and repulsive to the anode network, and the anode current collector is attractive to the anode network and repulsive to the cathode network, and wherein one or both of the anode and cathode current collectors comprises a coating providing a repulsive force between the current collectors and the opposite anode or cathode network.
10. Claims 11, 14-15 and 17-21 are allowed.
11. The instant claims are to a bipolar article having an arbitrary form factor, the article comprising: (a) a bipolar structure having an anode, a cathode, and an electrolyte in contact with and separating the anode and cathode; (b) a cathode current collector that is in electronic communication with the cathode; and (c) an anode current collector

that is in electronic communication with the anode, wherein the anode and cathode are self-assembling networks of particles disposed in the electrolyte, the cathode current collector is attractive to the cathode network and repulsive to the anode network, and the anode current collector is attractive to the anode network and repulsive to the cathode network, and wherein the bipolar article as a whole has an overall form that is not cylindrical or prismatic, the form including a thickness that varies across the length or width of the article.

The most pertinent prior art has been presented. The prior art does not teach the claimed invention.

With regard to Claim 11, the closest prior art, Hanafusa et al. (US 6,844,105 B1) and Chiang et al. (US 2003/0082446 A1), do not teach or fairly suggest a bipolar article having an arbitrary form factor, comprising an anode, a cathode, an electrolyte in contact with the anode and cathode, a cathode current collector, and an anode current collector, wherein the cathode current collector is attractive to the cathode network and repulsive to the anode network, and the anode current collector is attractive to the anode network and repulsive to the cathode network, wherein the bipolar article as a whole has an overall form that is not cylindrical or prismatic, the form including a thickness that varies across the length or width of the article.

### ***Response to Arguments***

12. Applicant's arguments with respect to claims 1 and 5-10 have been considered but are moot in view of the new ground(s) of rejection.



***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karie O'Neill Apicella whose telephone number is (571)272-8614. The examiner can normally be reached on Monday through Friday from 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PATRICK RYAN/  
Supervisory Patent Examiner, Art Unit 1795

Karie O'Neill Apicella  
Examiner  
Art Unit 1795

KOA